ABSTRACT

A system for detecting and measuring registration errors and chromatic aberration in color images derived from a color video camera includes an edge locator which finds edges in respective zones of the color images and stores sets of samples representing picture elements of each of at least two component color signals. A microprocessor processes the stored sample sets to identify a coarse displacement between corresponding samples of the two component color signals. The microprocessor then determines a fine displacement between the two color signals. The coarse displacement may be determined by performing a cross correlation on the two sample sets or by calculating respective sums of absolute difference between the two sample sets for different displacements between corresponding samples of the two samples sets. The fine displacement may be determined by interpolating samples interstitial to the samples of the first sample set surrounding the sample which is closest to the identified edge and interpolated samples interstitial to the samples of the second samples set which are displaced from the first set of samples by the coarse displacement and then performing a cross correlation on the resulting original and interstitial samples. The fine displacement may also be determined by fitting a parabolic curve to either the cross correlation values of the original sample values or to the calculated sum of absolute difference values for the two sample sets. The fine displacement, is added to or subtracted from the coarse displacement to obtain a measure of the registration error and/or chromatic aberration in the images to sub-pixel resolution.